



## Active learners in sustainable electronics and it

Schultz, Ole

*Publication date:*  
2015

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Schultz, O. (2015). *Active learners in sustainable electronics and it*. Poster session presented at 3rd International Conference on ICT for Sustainability, Copenhagen, Denmark.

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

# Active learners in Sustainable electronics and IT

## -poster presentation

**Ole Schultz ass. professor (Author)**

Department of Information Technology  
DTU Diplom  
Lautrupvang 15, 2750 Ballerup, DK  
osch@dtu.dk

Keyword: Active learning, problem based, teamwork, sustainability, lower power, wireless embedded system, embedded software protocols

### ABSTRACT

This poster-presentation is about active learning in a course sustainable wireless electronics and it. Active learning understood as practical lab-exercises and a team chosen project.

### INTRODUCTION

This poster will present how I activate the students in an elective course SUSIE (62562– 10 ECTS ref 1) and student's results. Students studying Electronics and IT/software are much focused on the technology rather than looking at environmental impact. Therefore we have integrated design for low energy and resources in the curriculum. Further, to motivate the students we let them build/program an embedded system from sensor to cloud (internet of things) which should have a purpose of bringing awareness about the way we use a house/living room as well bringing a better indoor climate. The course has been offered for the past 2½ years to Electronics and IT Bachelor of Engineering students at DTU Diplom former IHK.

### Project work

Finally, team based project work is undertaken with the purpose of using all the topics and lab-exercises from the classes in solving a self-chosen problem during 4weeks of each 8 hour:

*“Chose a problem domain for which it is relevant to monitor environmental data and controlling actuators, e.g. in a home, at Campus Ballerup, a green house, plant control, electrical vehicle, etc.” – “One of the wireless nodes should be powered by a renewable energy source”.* The poster will present examples on projects and labs and outline what is required to run such a course.

The website <http://www.sustainableelectronicit.org/> presents some of the student's projects.

### Relations to other courses

The poster will also short show how students from this course are inspired to cooperate with students enrolled in another elective course about a Sustainable development and design (SDTU). The students are then able to apply their knowledge from the SUSIE course in the cross disciplinary course, building prototypes for building control and learning about energy screening and regulations and standards for energy consumption in buildings.

### Outcome

By participating in this poster presentation you will get ideas about how students are motivated by defining their own problem and project and how the curriculum is designed.

### References:

1. [Sustainable wireless electronics and it](#)
2. Problemorienteret projektarbejde – Poul Bitsch Olsen & Kaare Pedersen- Roskilde universitetsforlag 1999.
3. DTU Course base [62370 - Bæredygtig udvikling og design, Sustainable DTU](#)
4. Course book: A. Dunkel, Jean- Phillipe Vasseur “Interconnecting Smart Objects with IP”, Morgan Kaufman 2010.